



High Temperature Velomitor® System (HTVS)

by Paul Shaklovitz

Marketing Specialist
Bently Nevada Corporation

and Brad Law

Sales Engineer
Bently Nevada Corporation

Vibration monitoring is widely used to increase the availability of gas turbines. Seismic casing vibration monitoring is sometimes used to supplement proximity probe vibration-based monitoring on gas turbines. Generally, only seismic casing vibration is monitored on aeroderivative gas turbines. This is often due to economic or transducer installation considerations.

Present high temperature seismic transducer technology

Velocity pickups

High temperature moving coil velocity transducers were once widely-used for casing seismic, rotor-related vibration monitoring of aeroderivative gas turbines. They are being replaced by high temperature accelerometers. Because high temperature velocity transducers have moving parts, they have limited lifespans and

are susceptible to accelerated degradation due to high cross axis vibration, which is often present on gas turbines.

Bently Nevada's High Temperature Velomitor System (HTVS), with no moving parts, provides a velocity output similar to that of a high temperature velocity pickup. It also solves many problems inherent in piezoelectric alternatives, and its price is comparable to that of a high temperature velocity pickup.

As velocity transducers degrade, the likelihood of false and missed trips increases. False trips often cause major business disruptions. Missed trips can result in greater machinery damage and associated costs than if the vibration monitor had detected an unacceptable increase in vibration and the machine had been shut down.

One approach to the problem of velocity transducer degradation is to replace the transducers on a periodic basis. This process involves additional cost, both in labor and material. It also increases machinery downtime, as machines are shut down to physically replace the transducer.

High Temperature Velomitor® System

The High Temperature Velomitor System has a high temperature piezoelectric sensing element. The piezoelectric sensing element and the electronics are in two separate cases, permanently connected by a sealed flexible tube. The whole assembly is hermetically-sealed. This allows the electronics to be located in an area where the temperature is much lower than it is on the casing of the gas turbine, without having connectors between the sensing unit and the electronics. Connectors between the piezoelectric sensing unit and the electronics have been a major source of nuisance alarms on gas turbines fitted with piezoelectric accelerometer-based seismic vibration monitoring systems.

Monitors

The High Temperature Velomitor System is compatible with the Bently Nevada 3300/55 Dual Velocity Monitor when the -05 transducer option is selected. It is also compatible with our 2201/03-02 and 2201/03-03 monitors.

Turbine tests

Each aeroderivative gas turbine has its own unique casing vibration environment. Therefore, the HTVS will be tested on each type before it is offered for general sale on that turbine. Contact your Bently Nevada sales representative for more information. ■